



COILED TUBING (CT) CUTTER FIELD ASSEMBLY and ARMING

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1.0 DESCRIPTION

- 1.1 Titan Spectra™ Coiled Tubing Cutters are designed for maximum interchangeability with accessory equipment commonly used in Coiled Tubing Pipe Recovery operations.
 - a) The top of the Cutter Assembly (Page 4) is equipped with a 1/2" – 20 UNF box thread for connecting to the 5/8" O.D. pin X pin Adapter Sub. A tool string with a maximum diameter of 5/8" (for SCP-0687T001) or 3/4" (for SCP-0875T001 and larger) is recommended above the Adapter Sub / Cutter Assembly.
 - b) Arming is accomplished through the use of a Resistorized Detonator assembly attached to a pressure resistant feed-thru bulkhead connector. Specific Safe Arming Hardware and Procedures are detailed in Section 4.0 below.
- 1.2 Coiled Tubing Cutters are PREASSEMBLED with Booster and all necessary internal components and are therefore ready for installation and arming at the wellsite.

Note: It is not recommended to disassemble the Coiled Tubing Cutter. Should disassembly be required for some reason, RETURN THE DEVICE TO THE MANUFACTURER.
- 1.3 An array of flexible, bladed centralizers is mounted to the bottom of the Cutter Assembly to assure maximum performance. These centralizers are free to rotate to prevent wireline damage due to torque buildup between blade and Coiled Tubing spline during running into the hole. **DO NOT REMOVE OR ATTEMPT TO FURTHER TIGHTEN THE ATTACHMENT BOLT. See details illustrated in Figures #1 & 2 on Page 6.**
- 1.4 Titan Coiled Tubing Cutters are rated for 18,000 PSI (124.11 mPa) service at 400° F (204° C) for one hour of downhole exposure.

2.0 SPECIFICATIONS

Titan Part Numbers	OD in / mm	Exp. / grams	DOT Class	Application
SCP-0687T001	.687 / 17.45	HMX / 2.0	1.4S	See Application Charts Located on Pages 5 & 6.
SCP-0780T001	DISCONTINUED			
SCP-0875T001	.875 / 22.22	HMX / 3.0	1.4S	
SCP-1000T001	1.000 / 25.40	HMX / 3.0	1.4S	
SCP-1188T001	1.188 / 30.17	HMX / 6.25	1.4S	
SCP-1375T001	1.375 / 34.93	HMX / 6.1	1.4S	

3.0 ACCESSORY COMPONENTS

Item	Titan Part number	Description
1	JRC-100158235	Shunt Plug - Thread Protector
2	JRC-100158234	Protective Holder
3	JRC-100005498	Contact Adapter Sub (.625" O.D., 1/2" - 20 UNF Pin X Pin)
4	DETO-D1210-J	Detonator Assembly, Coiled Tubing Cutter, Resistorized (contains 1 ea. A-161 electric detonator, 49 – 61 Ohms)

4.0 FIELD ASSEMBLY / ARMING PROCEDURE (see illustrations on page 7)

- 4.1 Pre-check wireline circuit, cable head, CCL and any adapters for continuity and insulation integrity prior to off-loading the Coiled Tubing Cutter Assembly (See API - RP 67).
- 4.2 In accordance with API - RP 67, turn off radios, welders, cathodic protection devices. Turn off electrical generator of perforating unit. Be sure cable Safety Switch is in SAFE mode. Measure stray voltages between unit to ground, rig to ground and wellhead to ground, ensuring no stray voltages are present. Electrically bond perforating unit, rig and wellhead with grounding straps.

ENSURE THAT NO VOLTAGE IS PRESENT BETWEEN WIRELINE CONDUCTOR AND GROUND, USING AN APPROVED BLASTERS MULTIMETER.

- 4.3 Install the Shunt Plug (JRC-100158235) onto top of the Contact Adapter Sub (JRC-100005498) hand tight. The Shunt Plug also serves as a Thread Protector.

- 4.4 Remove the Detonator Assembly (JRC-100010855) from its transport container and packaging and install it into the Contact Adapter Sub.
- 4.5 Remove the Shunt Wire and Moisture Seal Tape from the Detonator Assembly and install the Protective Holder (JRC-100158234) hand tight. Remove the Shunt Plug and attach the leads of a Blaster's Multimeter to the top electrical contact assembly and the outside of the Protective Holder. The Detonator circuit resistance should measure 49 – 61 Ohms, according to the manufacturer.
- 4.6 **BE SURE THAT THE SAFETY KEY IS VISIBLE AT THE ARMING SITE.** Assure that after the tool string is attached to the wireline that no voltage exists at the bottom electrical connection. Remove the Shunt Plug and connect the Adapter (with Detonator assembled and with Protective Holder in place) to the tool string. This connects the detonator lead to the hot wire.
- 4.7 Remove the Protective Holder from the Detonator Assembly and install the Coiled Tubing Cutter Assembly. Snug the tool joint with non-sparking wrenches. The Coiled Tubing Cutter is now ready to run into the well.

5.0 DISARMING THE TUBING CUTTER ASSEMBLY

- 5.1 Prior to going into the well
 - 5.1.1 Remove the Coiled Tubing Cutter Assembly from the Adapter Sub.
 - 5.1.2 Install Protective Holder over the Detonator Assembly, hand tight;
 - 5.1.3 Remove Adapter/Detonator Assembly (with Protective Holder in place) from the wireline/tool string and install Safety Plug. Remove Protective Holder, reinstall the Shunt Wire and place the Detonator Assembly into an approved transportation/storage container.
- 5.2 After running into the well
 - 5.2.1 Use the procedure as outlined in 5.1.1 thru 5.1.3 above. Malfunctioned explosive tools may produce hard to break tool joints. This may indicate trapped pressure in the tool assembly. Unless you are experienced in disarming such devices, it is recommended that you contact your field technical representative **IMMEDIATELY** for assistance.

DETERMINATION OF JET CUTTER SIZE FOR COILED TUBING APPLICATIONS
(See COILED TUBING/JET CUTTER APPLICATIONS Chart)

A) NON-TAPERED COILED TUBING STRINGS

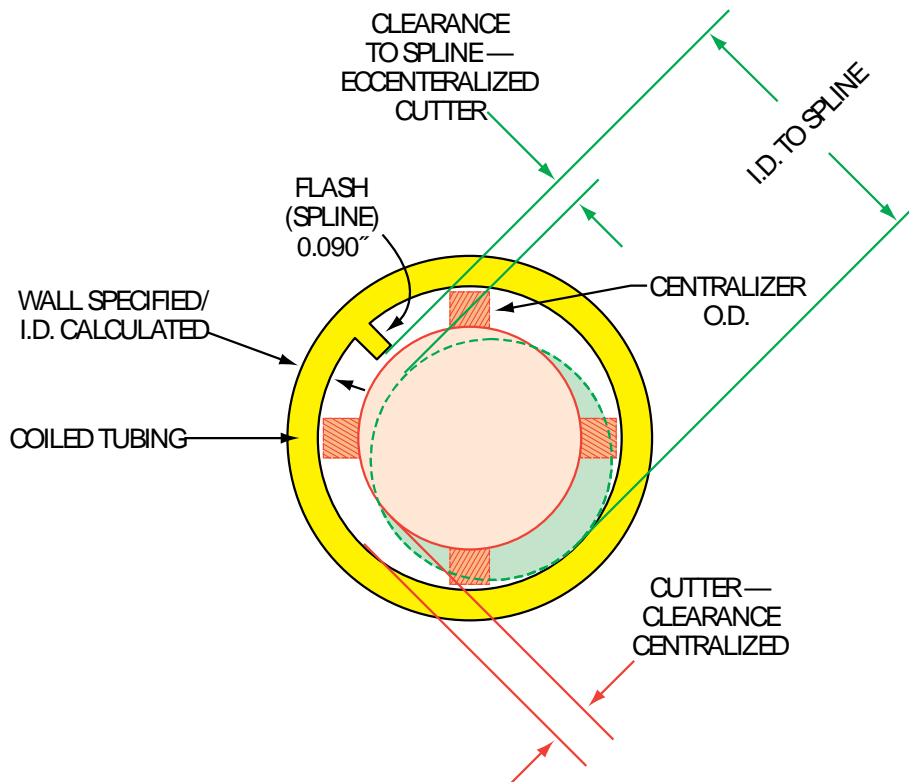
- STEP 1.0 Identify Coiled Tubing O. D. (e.g. 1.5" OD).
2.0 Locate "Wall Specified", or "I.D. Calculated" or "Nominal Weight" on CHART opposite (e.g. 0.116/1.268/1.719 lbs/ft).
3.0 Read Coiled Tubing Cutter O.D. to be deployed in Column 1 (e.g. 1.000").

B) TAPERED COILED TUBING STRINGS

- STEP 1.0 Determine "O.D. Specified" for the string (e.g. 1.5" O.D.).
2.0 For the greater wall thickness **upper string**, determine "Wall Specified" or "I.D. Calculated" or "Nominal Weight" from CHART opposite (e.g. 0.190"/1.120"/2.662 lbs/ft).
3.0 Read Coiled Tubing Cutter O.D. size (to deploy) in Column 1 (e.g. 1.000").
4.0 For associated dimensional data refer to respective columns on the Chart.

Note:

- A Jet Cutter should not be operated in a string where the Clearance to Spline (Flash) is less than 0.030".
- When drift bars are run to verify Cutter descent, the drift bar should be:
 - a) Diameter = (I.D. to Spline - 0.032")
 - b) Length = 3.0"
- Titan Coiled Tubing Cutters are rated for 18,000 PSI (124.11 mPa) service at 400° F (204° C) for one hour of downhole exposure.



COILED TUBING/JET CUTTER APPLICATIONS DATA
Dimensions (Inches)

TUBING CUTTER O.D.	COILED TUBING DATA*					CUTTER DATA		
	O.D. Specified	Nominal Weight Lbs./Ft.	Wall Specified	I.D. Calculated	I.D. To Spline**	Centralizer O.D.	Clearance Centralized	Clearance To Spline
1.375	2.000	2.207	0.109	1.782	1.692	1.80	0.204	
	2.000	2.340	0.116	1.768	1.678		0.097	
	2.000	2.509	0.125	1.750	1.660		0.188	
	2.000	2.677	0.134	1.732	1.642		0.179	
	2.000	2.880	0.145	1.710	1.620		0.168	
	2.000	3.080	0.156	1.688	1.598		0.157	
	2.000	3.419	0.175	1.650	1.560		0.138	
	2.000	3.682	0.190	1.620	1.530		0.123	
	2.000	3.923	0.204	1.592	1.502		0.109	
1.188	1.750	1.915	0.109	1.532	1.442	1.53	0.172	0.067
	1.750	2.029	0.116	1.518	1.428		0.165	0.053
	1.750	2.175	0.125	1.500	1.410		0.156	
	1.750	2.318	0.134	1.482	1.392		0.149	
	1.750	2.492	0.145	1.460	1.370		0.136	
	1.750	2.662	0.156	1.438	1.348		0.125	
	1.750	2.951	0.175	1.400	1.310		0.106	
	1.750	3.173	0.190	1.370	1.280		0.091	
	1.750	3.377	0.204	1.342	1.252			0.064
1.000	1.500	1.429	0.095	1.310	1.220	1.30	0.155	
	1.500	1.527	0.102	1.296	1.206		0.148	
	1.500	1.623	0.109	1.282	1.192		0.141	
	1.500	1.719	0.116	1.268	1.178		0.134	
	1.500	1.840	0.125	1.250	1.160		0.125	
	1.500	1.960	0.134	1.232	1.142		0.116	
	1.500	2.104	0.145	1.210	1.120		0.105	
	1.500	2.245	0.156	1.188	1.098		0.044	
	1.500	2.483	0.175	1.150	1.060			0.060
	1.500	2.665	0.190	1.120	1.030			0.030
0.875	1.250	1.002	0.080	1.090	1.000	1.10	0.108	
	1.250	1.083	0.087	1.076	0.986		0.101	
	1.250	1.175	0.095	1.060	0.970		0.093	
	1.250	1.254	0.102	1.046	0.956			0.081
	1.250	1.332	0.109	1.032	0.942			0.067
	1.250	1.408	0.116	1.018	0.928			0.053
	1.250	1.506	0.125	1.000	0.910			0.035

0.780	DISCONTINUED							
0.687	1.000	0.788	0.080	0.840	0.750	0.84		0.063
	1.000	0.850	0.087	0.826	0.736			0.049
	1.000	0.920	0.095	0.810	0.720			0.033
	1.000	0.981	0.102	0.796	0.706			0.019
	1.000	1.040	0.109	0.782	0.692			0.005

* Data extracted from *Precision Tube Technology Coiled Tubing Technical Handbook (For New Tubing)*.

** Based on Spline (Flash) of 0.090".



Figure #1

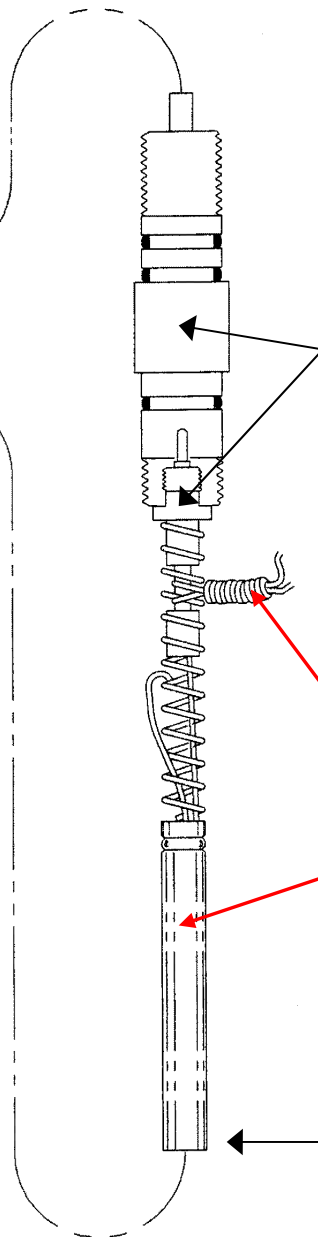
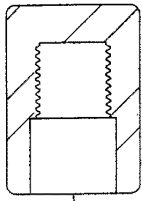


Figure #2

Centralizer Blade Details

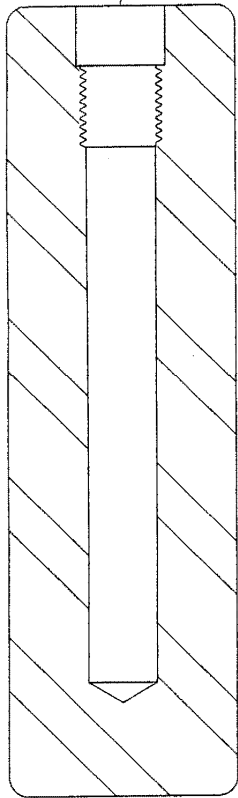
Item # 1
Shunt
Plug

Components required for assembly and installation.

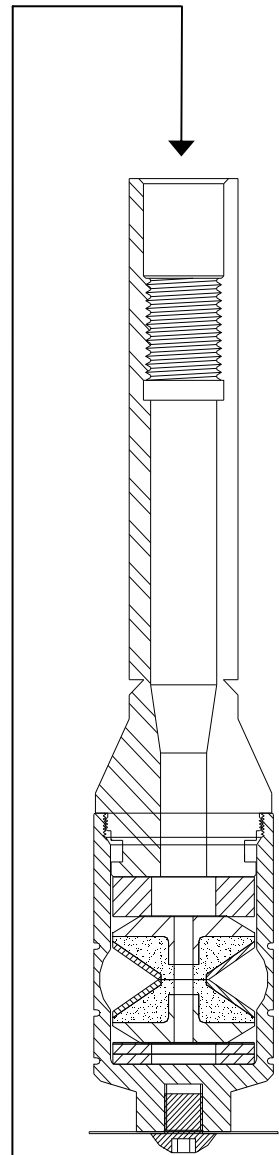


Item # 3 & 4 Contact
Adapter Sub (attached
to Detonator
Assembly).

Remove Shunt Wire
and Moisture Seal
Tape before installation
into the Protective
Holder or Tubing Cutter
Assembly.



Item # 2
Protective
Holder



Coiled Tubing
Cutter Assembly